

# THE Montessori METHOD

**R**ecent research identified children's ability to recognise quantity soon after birth. Montessori also acknowledged these unique qualities by speaking about the child being born with a 'mathematical mind' (Montessori, 2007). By this she meant that as children mature they develop an ability to match, pair, sort and classify information and organise it in a logical way. In Montessori nurseries children explore and learn to identify shapes; they pair sound cylinders, sort natural materials, such as shells, pebbles and conkers, according to size or texture. They also develop grading skills when using activities such as the colour tablets. They are introduced to 1:1 correspondence when matching cylinders with appropriate sockets in the cylinder block, and also explore length, weight and size through their play.

When they're ready and show interest, children are introduced to counting with the help of number rods and sandpaper numerals. They gradually learn about both cardinal and ordinal numbers, and their relationships with the written symbol. Working first with quantities they focus on sequence, as well as patterns of numbers such as odd and even. At all times children have objects to manipulate and organise to enhance their mathematical understanding.

Unique to Montessori is her approach to the decimal system. The child who knows numbers up to 10 is introduced to the names of the hierarchies within the decimal system using the bars, squares and cubes made out of the Golden Beads. With the help of these 'fixed quantities', young children are able to count up to 9,999. To enhance their understanding of the decimal system hierarchies, they have access to numeral cards, which use colour to represent the hierarchies. The cards are also designed to highlight the place value of zero. With the help of these materials children can be introduced to numerical operations such as addition or multiplication and



**Barbara Isaacs** describes ways in which numeracy can be promoted in and outside the nursery...

have the opportunity to work with large numbers long before they learn to add or subtract units and tens.

## Summer sums

Mathematics activities are easy to plan and prepare outside too. For example, why not number all the nursery bikes, tricycles and scooters? The same numbers, attached to a fence, then identify 'parking' places for them, encouraging children to leave them there when they're finished. (This approach also avoids having a pile of bikes in the middle of the playground or fighting over who uses them and when.)

The garden provides opportunities for counting by having a collection of pebbles or shells which can be counted into flower pots marked by numbers from 0-10 and organised into a number line by being attached to a wooden board. Different size buckets can be filled with sand and weighed. Old flower pots can be sorted by colour or size. Dolls' clothes can be washed and hung on a washing line, once again sorted by size, colour or garment. Sunflower seeds or daffodil bulbs are ideal for adding or subtracting, and you could measure the volume of the watering can by filling it with the help of ladles, cups, jugs or buckets.

Finally, a collection of large packing cases will serve not only for making dens and creating large constructions, but also to see how each shape fits inside another or to compare the sides of each case to discover if it's a square or a rectangle, or even an interesting conical shape or pyramid. The opportunities for maths outdoors are endless; why not try to introduce some of them in your nursery this summer?

## taking it further

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